

CLAIMS

1. A fiber-to-the-home (FTTH) system, comprising:
 - at least one digital home communications terminal (DHCT) for receiving forward signals and for transmitting reverse RF signals, the reverse RF signals including header information and payload data;
 - 5 a single wire return device (SWRD) for receiving the reverse RF signals, demodulating the reverse RF signals, and converting the demodulated signals to Ethernet signals;
 - an optical network terminal (ONT) coupled to the SWRD for converting the Ethernet signals to optical signals, and for transmitting the optical signals to a headend facility via optical fiber; and
 - 10 a downstream modulator located in the headend facility for receiving the optical signals and for sending the forward signals, the downstream modulator having an identification number that is inserted into the forward signals,
 - 15 wherein the at least one DHCT inserts the received modulator identification number in the reverse header information, and wherein the SWRD converts the modulator identification number into an Internet Protocol address indicative of the modulator identification number.
- 20 2. The FTTH system of claim 1, the SWRD comprising:
 - a diplex filter coupled for filtering forward signals and the reverse RF signals;
 - an upstream demodulator coupled to the diplex filter for demodulating the reverse RF signals;
 - a microprocessor for converting the demodulated signals to Ethernet signals; and
 - 25 a switch for receiving the Ethernet signals and any additional signals from a second source, the switch for combining the signals and for providing a combined signal to the ONT.
3. The FTTH system of claim 2, wherein the SWRD converts the identification number into the Internet Protocol number via the microprocessor.
- 30 4. The FTTH system of claim 1, wherein the ONT receives the forward signals, wherein the forward signals comprise at least one of a telephone signal, Ethernet signals, data signals, and audio/video signals, and wherein the ONT provides the at least one of

Ethernet signals, data signals, and audio/video signals to the SWRD and provides the telephone signals to a connected telephone.

5. A method for transmitting reverse signals in a fiber-to-the-home (FTTH) network, the FTTH network including a forward path and a reverse path, the method comprising the steps of:

generating a reverse RF modulated signal including header information in a digital communications terminal (DCT);

providing the reverse RF modulated signal via coaxial cable to a single wire return device (SWRD);

demodulating the reverse RF modulated signal to provide a reverse demodulated signal;

processing the reverse demodulated signal to provide a reverse Ethernet signal;

converting the reverse Ethernet signal to a reverse optical signal in an optical network terminal (ONT); and

receiving the reverse optical signal at a downstream modulator located in a headend facility,

wherein the downstream modulator transmits a forward signal in response to the received reverse optical signal.

6. The FTTH system of claim 5, wherein the downstream modulator includes an identification number that is inserted into signals transmitted in the forward path and stored in the DCT, and wherein the DCT inserts the received identification number into the reverse header information prior to transmitting to the SWRD.

7. The FTTH system of claim 6, wherein the SWRD converts the identification number into an Internet Protocol address that is indicative of the identification number.

8. The FTTH system of claim 5, the method comprising the further steps of:

receiving the forward signals at the ONT, wherein the forward signals comprise at least one of a telephone signal, Ethernet signals, data signals, and audio/video signals, and wherein the ONT provides the at least one of Ethernet signals, data signals, and audio/video signals to the SWRD and provides the telephone signals to a connected telephone.